



## **CHEM 1406.088 – Introduction to Chemistry I – ONLINE**

**Course Syllabus:** Spring 2026

*“Northeast Texas Community College exists to provide personal, dynamic learning experiences empowering students to succeed.”*

### **Instructor: Sarah Whitfield**

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Office	Monday	Tuesday	Wednesday	Thursday	Friday	Online
Hours	By appt.	8:30 – 9:30am 4:30 – 5:30pm	8:30-9:30am 10:30am – noon 1:00 – 5:30pm	8:30 – 9:30am	By appt.	Email anytime*

\*Refer to Communications section of syllabus

***This syllabus serves as the documentation for all course policies and requirements, assignments, and instructor/student responsibilities.***

*Information relative to the delivery of the content contained in this syllabus is subject to change. Should that happen, the student will be notified.*

### **Course Description:** 4 credit hours.

Lecture/Lab/Clinical: Three hours of lecture and three hours of lab each week.

A survey course introducing chemistry, designed for allied health students and for students who are not science majors. Topics include inorganic, organic, and biochemistry with an emphasis on health sciences. The natural sciences and health science divisions of the college recommend that CHEM 1406 be the first course in any health sciences sequence and be taken prior to enrolling in A & P I. The topics covered in CHEM 1406 serve as a foundation to the following courses: A & P I and A & P II, Microbiology and Nutrition. May be taken as preparation for [CHEM 1411](#) but cannot be substituted for CHEM 1411.

Note: Additional course fee(s) required.

**Prerequisite(s):** TSI complete.

### **Core Curriculum Purpose and Objectives:**

Through the core curriculum, students will gain a foundation of knowledge of human cultures and the physical and natural world; develop principles of personal and social responsibility for living in a diverse world; and advance intellectual and practical skills that are essential for all learning. Courses in the foundation area of life and physical sciences focus on describing, explaining, and predicting natural phenomena using the scientific method. Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

## **College Student Learning Outcomes:**

### Critical Thinking Skills

CT.1 Students will demonstrate the ability to 1) analyze complex issues, 2) synthesize information, and 3) evaluate the logic, validity, and relevance of data.

### Communication Skills

CS.1 Students will effectively develop, interpret, and express ideas through written communication.

### Empirical and Quantitative Skills

EQS.1 Students will manipulate numerical data or observable facts by organizing and converting relevant information into mathematical or empirical form.

EQS.2 Students will analyze numerical data or observable facts by processing information with correct calculations, explicit notations, and appropriate technology.

### Teamwork

TW2. Students will work with others to support and accomplish a shared goal.

## **Student Learning Outcomes:**

1. Demonstrate the ability to carry out conversion problems, including dosage, nutritional, and temperature conversions.
2. Be able to identify part of the atom, write isotopic formulas, write nuclear decay equations, and solve half-life problems.
3. Be able to define the octet rule, predict charges on ions, identify ionic vs. covalent bonding, write formulas and names for compounds, and use VSEPR theory to predict shapes of simple molecules.
4. Be able to write and balance chemical equations, recognize reaction types, define oxidation/reduction, and understand the factors that influence reaction rate.
5. Be able to distinguish organic and inorganic compounds, identify functional groups and distinguish and identify isomers. Name straight chain, branched and cycloalkanes or alkenes.
6. Identify types of attractive forces present in compounds, define pressure, and solve simple gas law problems.
7. Distinguish between solute and solvent, write equations with solutions such as electrolytes and nonelectrolytes. Express concentrations as percentage, equivalent or molarity units and perform dilution calculations.
8. Describe acids and bases using Arrhenius and Bronsted-Lowry definitions, define chemical equilibrium and use LeChatelier's principle, identify acid/base conjugate pairs, write an equilibrium expression, and calculate pH or  $[\text{H}_3\text{O}^+]$ .
9. Be able to understand the structure and metabolic activity of carbohydrates, lipids, proteins, and nucleic acids.
10. Working in teams, students will demonstrate safe and proper handling of laboratory equipment and chemicals and carry out experiments and experimental work by calculating, interpreting, and communicating experimental results clearly in lab notebooks or written reports.

**These learning objectives will be assessed throughout the course and on the final exam.**

**Evaluation/Grading Policy:**

35% Chapter exam average (5)

25% Laboratory average

15% Homework Average (ALEKS/other)

15% Pie Progress Goal

10% Comprehensive Final Exam

100% Overall course grade

**Grading Scale**

A 100-90%

B 89-80%

C 79-70%

D 69-60%

F &lt;59%

Grades are posted to Blackboard during the term. The student should email the instructor for any questions or concerns about grades. Graded work is typically returned within a week. Overall grades will be rounded according to standard rounding rules (i.e., an 89.4 = 89 but an 89.5 = 90), and grades must be earned (not “bumped up” to a higher letter grade that was not earned).

**Required Instructional Materials:**

**Inclusive Access:** NTCC has negotiated with the publisher to obtain a discounted price for the lecture course materials. **The student's eBook and ALEKS are included in the price of tuition** and will be available on the first day of class through a link in Blackboard - Start Here folder. The materials are required for this class and essential for student success. Optional print copies of the textbook, in addition to electronic access, are available in the College Store for purchase at a discounted price. Through Feb. 4, 2026, the student may opt out of purchasing these materials from the College Store. If a student chooses to opt out, NTCC will issue a refund for the Inclusive Access, and the student will be responsible for purchasing the eBook and ALEKS from another vendor.

**General, Organic, and Biological Chemistry w/ALEKS 360 Smith; 6<sup>th</sup> Edition**

**Publisher:** McGraw-Hill                    **SBN10:** 1260732037 | **ISBN13:** 9781260732030

**CHEM 1406: 584264DV - Intro to Chemistry Lab Kit** – Each student must order a Chemistry Lab Kit from the Bookstore. Once the order is processed, the student will receive an email with the **lab kit redemption code** and instructions in the email to *redeem* the lab kit voucher code on the Carolina Science website. Carolina ships the physical kit directly to the student's address within 48 hours after redeeming the lab kit code. The student should receive the physical kit within 5 business days. Note: The physical lab kit will NOT be shipped UNTIL the lab kit voucher code is redeemed.

**Various household items** to complete the labs

**Scientific calculator:** A TI-30X is recommended; No programmable or cell phone calculators are allowed on quizzes and exams; sharing calculators is not permitted. Bring a calculator to class every day.

**Optional Instructional Materials:**

A spiral notebook is recommended for taking notes from the PowerPoint slides and for scratch paper while working through homework problems in ALEKS. (Note: The homework is totally online, but when reviewing, it is helpful to have ready access to these homework solutions.

Therefore, don't tear pages out of the notebook; keep it all together.) One of the challenges of taking an online class is staying organized. A spiral notebook is not the only method to stay organized, but some system of organization is imperative.

### **Minimum Technology Requirements:**

Laptop or computer with high-speed internet access

Microsoft Office 365 (available as a free download for all NTCC students)

Scientific calculator as described above in Required Instructional Material

### **Required Computer Literacy Skills:**

Ability to use a web browser to access NTCC Blackboard Learning Management System for course information, eBook, ALEKS assignments, and lab experiments.

Ability to access NTCC student email system and communicate professionally and competently with instructor

Ability to create and complete Word documents, save on your computer, and upload into Bb assignment links as needed.

**Communications:** NTCC email is the official form of communication used by the college. Course announcements are made through Blackboard and copied to the student's NTCC email account. To schedule a virtual TEAMS or in-person appointment with the instructor outside of office hours, the student should email the instructor. Students may email anytime, even after hours and weekends. The instructor typically responds to email messages within 24 hours.

### **Course Structure and Overview:**

#### **Lecture:**

This online course is designed to cover the same concepts and topics taught in a traditional (face-to-face) Introductory Chemistry course. Online instruction is provided through reading assignments, powerpoint slide presentations, tutorials, simulations, visualizations, videos, and homework practice to reach mastery using the learning management system *Blackboard* with the eBook *General, Organic, and Biological Chemistry*, and the online homework system *ALEKS 360*. Laboratory experiments will be completed at home using materials in the *Carolina* lab kits and some common household items. The course does NOT meet virtually (such as on Teams), but the instructor is available to meet virtually with students individually by appointment.

**Tentative Course Timeline (\*note\* instructor reserves the right to adjust this timeline at any point in the term):** *A printable detailed schedule can be found in the Start Here folder of Blackboard.*

Week 1: Chemistry basics, measurement, dimensional analysis, log-in to "ALEKS 360"; lab safety

Week 2: Atoms and isotopes, radioactivity, nuclear changes; half-lives, measurements lab

Week 3: Electrons in atoms, octet rule, ionic and Exam 1, bonding lab

Week 4: Covalent bonds and VSEPR; molecular modeling lab

Week 5: Kinetics, reduction-oxidation reactions; reactions in solution lab

Week 6: Exam 2, Gas laws, ideal gas law lab

Week 7: Intermolecular forces; solutions, electrolytes, dilution, solutions lab

Week 8: Exam 3 (comprehensive midterm); Identifying and naming acids and bases, and pH; redox titration lab

Week 9: Equilibrium constants, weak acids/bases; LeChatelier's Principle; organic molecular model lab

Week 10: Representing organic compounds, functional groups, nomenclature of organic compounds, isomers, condensation reactions lab

Week 11: Unit 4 Exam; dietary lipids; osmosis lab

Week 12: Classes of carbohydrates, identifying unknown lab

Week 13: Protein structure and function, enzymes; enzyme catalysis lab

Week 14: Components and formation of nucleic acids, DNA, RNA, protein synthesis

Week 15: Metabolism; Exam 5

Week 16: Final Exam

### **Exams:**

- Exams 1, 2, 4, and 5 are taken in Blackboard during the scheduled window of time that generally runs from 8am Saturday through midnight Tuesday (see schedule for exact dates). Typically, they consist of a mixture of multiple choice and free response questions. Students may use a non-programmable calculator and **instructor-provided** reference information like a periodic table and equation list. Using other resources is academic dishonesty and may result in disciplinary action per the NTCC Academic Honesty and Academic Ethics policy. The exams use Respondus Lockdown Browser which does *not* require a video camera.
- Exam 3 (midterm exam) and the Final Exam are both comprehensive and must be taken during the scheduled window of time at the **NTCC testing center or an alternative proctored location**.  
**Students CANNOT take these two exams at home.**

These are the options for the two proctored exams:

#### Use the NTCC testing center

NTCC's testing center is located on the main campus of NTCC in the Student Services Building. The hours of the testing center are Monday—Thursday 8:00 a.m. to 6:00 p.m. and Friday 8:00 a.m. to 12:00 p.m. The center does not allow students to begin an exam within one hour of closing time.

#### Use another testing center

If a student does not reside near NTCC's service center, he may choose to take these exams at another testing center. If desiring to use an alternate test center, the student must give the instructor contact information for the alternate test center (physical address, email, and a phone number) by Wednesday of the second week of class so the instructor can contact the center to determine if it will be acceptable. It is the student's responsibility to find this alternate test center and to pay any fee the center may charge.

These comprehensive exams have types of questions similar to the other exams. Likewise, students may use a non-programmable calculator and **instructor-provided** reference information like a periodic table and equation list.

### **Laboratory Experiments:**

Laboratory work is an integral part of the chemistry class. Computer-based virtual labs are useful but cannot provide the true hands-on experience that comes with the traditional chemistry laboratory. To overcome this obstacle, students will purchase and use a home lab kit from Carolina Science. To keep costs down, some labs are virtual computer simulations or dry labs.

On the Carolina platform, the student will be guided through the pre-lab reading and lab instructions and have access to helpful resources along the way. There will be knowledge check questions along the way to confirm understanding of the lab content. After going through the pre-lab material, the student **must score a 100%** on a pre-lab assessment/quiz to move on with the lab. For any question missed, the student will review the pertinent material and then answer again only the questions missed the first time. Once all the quiz questions are answered correctly, the student begins the hands-on part of the lab. The program will walk the student through the instructions for completing the experiments, recording data and uploading photos of the work, with name and date visible. Note: The LAB NOTEBOOK is accessed via a button at

the top right of the screen. Once complete, the student must 1) save and close the lab notebook then 2) navigate back to the Assignments page and click submit the specific lab then 3) confirm submission. Please note that the lab CANNOT be changed once submitted in Carolina Gateway. *Make sure the work is complete before clicking Submit.* Lastly, the student will answer post-lab questions directly in Blackboard.

- Students receive two grades for each experiment:
  - The **Lab Notebook grade** in Carolina is worth 50 points
  - The **Post-Lab Questions** in Blackboard are worth 50 points.
- **Lab assignments are due Saturdays at midnight.** Refer to the course schedule for titles and due dates of specific labs.
- **No late labs** are accepted.
- There are **no make-up labs** for missed experiments, but the lowest grade will be dropped at the end of the course.
- To avoid getting behind in lab, the student should ORDER THE LAB KIT ASAP following the instructions provided by the NTCC bookstore and should contact the instructor if there are any issues getting the lab kit.

### **Homework:**

This category includes homework assignments in ALEKS, an online homework system, as well as any other assignments that do not fit into another category.

- To register for the ALEKS materials, simply **click on the ALEKS link found at the top of the course page in Blackboard** and complete the registration using the NTCC email; no access code is needed.
- Use this same link to access homework assignments throughout the semester.
- ALEKS homework is due on **Sundays at midnight** (see schedule for specific due dates). Students should NOT wait until the night before the due date to start these assignments but rather should pace themselves. Chemistry is learned through practice.
- There are two kinds of ALEKS assignments:
  - Traditional, non-adaptive **Homework** assignments which are open from the first day of class until the due date.
    - Students have 5 attempts to answer each question correctly.
    - Students have 2 attempts to submit each Homework assignment until the due date.
    - Students may retake the incorrect problems after the first submission; ALEKS keeps the best score.
    - Students have access to embedded resources (on the right bar in ALEKS) such as the eBook, periodic table, tables of reference material, and sometimes short instructional videos. Students also have access to explanations, but it will “cost” them one of their 5 attempts on the question.
    - After the due date, a student may submit an ALEKS Homework assignment late with a 2% per day penalty.
  - Non-traditional, adaptive **Modules** which are available only during the “open” window. Only one Module can be open at a time, but if the student submits a Module before the due date, then no module is open at that time, so he may work on any future or past modules.
    - ALEKS Modules require the student to answer correctly (variations of) a question three to five times before receiving credit; the required number of correct answers varies for each question.
    - There are fewer questions than traditional homework assignments to give time to

“prove” mastery by correctly answering multiple times (as well as to give time to refer to embedded resources for topics not yet understood).

- The student earns full credit for a Module by *completing* the required number of correct answers before the due date, regardless of how many questions are missed in the process. Once the due date is past, the Module grade is locked in. If the student works on the Module later, the Pie Progress Goal grade improves but not the Module grade (see paragraph about ALEKS grades below).
- Students have access to embedded resources like the eBook, periodic table, reference material, explanations, and sometimes short instructional videos.
- There is no penalty for clicking Explanation in Modules; it gives a detailed solution to the problem and then gives a new problem to try for credit.
- **The goal is to *master* the topic.**

- Both kinds of ALEKS assignments require **great attention to detail**; this is a needed skill in chemistry and one that will transfer to any career path. In Modules, do not hesitate to click on Explanation to see what is wrong; often it is just a small detail like rounding off to the wrong number of significant figures. (Homework does not offer Explanations.)

There are two kinds of grades earned in ALEKS:

- The **Homework grade** earned on Modules and Homework assignments as of the due dates.
- The **Pie Progress Goal grade** tracking topics the student has mastered (shown through Homework assignments, Modules, and Knowledge Checks) throughout the semester.
  - ALEKS **Knowledge Checks** assess the student’s mastery at the beginning and end of the semester and a couple of times during the semester. They are used to personalize learning and ensure retention of learning. They may contain up to 25 questions.
  - It is to the student’s advantage to try to reason out the answer or even make a guess on these knowledge checks because ALEKS updates the Pie Progress chart and adapts the cycles of learning/assessing based on these answers.
  - It is possible to *lose* part of the Pie Progress Goal if mastery is not retained (and it is possible to re-gain it later). Again, the goal is to master the topics and retain that knowledge.
  - Only one module may be open at a time in ALEKS. Because of this, there are only two times a student can work on past-due modules to show increased mastery: during scheduled Open Pie times and during the time after the current module is submitted but before its due date. These are times when no module is open, allowing students to work on *any* Module, future or past due, to improve the Pie Progress Goal by showing more mastery. The Homework grade will not change, but the Pie Progress Goal will improve.
- Please note that the Pie Progress Goal starts out as a low percentage and increases as the student gains more mastery; do not be alarmed by a low Pie Progress Goal grade at the beginning.

## Institutional/Course Policy:

### Attendance:

Regular and punctual attendance is expected for all students. Attendance is necessary for successful completion of course work. Students are expected to communicate with the instructor regarding any absence. *Attendance in this online course is counted by submitting assignments on time.* This course does not meet virtually (such as on Teams) or face-to-face. Attendance is certified by completing

the **Student Questionnaire** in the Start Here folder of Blackboard by midnight, **January 23, 2026**.

**Student responsibilities:** Students should recognize that this is an online course.

- ✓ The student will do the same amount of work as if attending in-person.
- ✓ The student will NOT have specific days and times for class each week.
- ✓ The student will not be with the instructor and classmates in person but will study the material in Blackboard and ALEKS on his own time.
- ✓ The student will complete the labs at home on his own time using materials from the Carolina lab kit and household items.
- ✓ The student must follow lab directions and lab safety protocols taught in Carolina Science Online.
- ✓ The student must take the initiative to contact the instructor for help as needed, but this will not be immediately available (like raising your hand in class would be).
- ✓ The student must have **self-discipline** and **organization** to complete assignments **on time**.
- ✓ The student must arrange for proctoring the mid-term and final exams at a testing center as described above in the Course Overview.
- ✓ **The student must check Blackboard messages/NTCC email every day.**

**Late work:** Chemistry is a sequential course; each topic builds on previously taught topics. Therefore, it is critical to meet the assignment deadlines each week.

- *Exams* must be taken at the scheduled time unless alternate arrangements are made with the instructor before the exam is administered.
- No late *labs* are accepted. (If the student has extenuating circumstances regarding completion of a lab, he should contact the instructor BEFORE the due date.) Failure to *order the lab kit* by the end of the first week of class will not be an acceptable reason for late labs.
- The late policy for ALEKS is explained above in the section titled Homework.

**Withdrawing:** There is a procedure for withdrawing from this course; the student should not simply quit attending. If the student determines that it is in his best interest to withdraw from this course, the student must contact the Registrar's office to initiate the withdrawal process (903-434-8139 or [bgooding@ntcc.edu](mailto:bgooding@ntcc.edu)). The last day to drop this course with a grade of W is Thursday, April 16, 2026.

**Failure to officially withdraw by this date will result in the student's earned grade being factored into the GPA.**

#### **Alternate Operations During Campus Closure and/or Alternate Course Delivery Requirements**

In the event of an emergency or announced campus closure due to a natural disaster or pandemic, it may be necessary for Northeast Texas Community College to move to altered operations. During this time, Northeast Texas Community College may opt to continue delivery of instruction through methods that include, but are not limited to, online through the Blackboard Learning Management System, online conferencing, email messaging, and/or an alternate schedule. It is the responsibility of the student to monitor NTCC's website (<http://www.ntcc.edu/>) for instructions about continuing courses remotely, Blackboard for each class for course-specific communication, and NTCC email for important general information.

Additionally, there may be instances where a course may not be able to be continued in the same delivery format as it originates (face-to-face, fully online, live remote, or hybrid). Should this be the case, every effort will be made to continue instruction in an alternative delivery format. Students will be informed of any changes of this nature through email messaging and/or the Blackboard course site.

**Statement Regarding the Use of Artificial Intelligence (AI) Technology:**

Absent a clear statement from a course instructor, use of or consultation with generative AI shall be treated analogously to assistance from another person (collusion). Generative AI is a subset of AI that utilizes machine learning models to create new, original content, such as images, text, or music, based on patterns and structures learned from existing data (Cornell, Center for Teaching Innovation). Unauthorized use of generative AI tools to complete an assignment or exam is not permitted. Students should acknowledge the use of generative AI and default to disclosing such assistance when in doubt. Individual course instructors may set their own policies regulating the use of generative AI tools in their courses, including allowing or disallowing some or all uses of such tools. Students who are unsure of policies regarding generative AI tools are encouraged to ask their instructors for clarification. **(Adapted from the Stanford University Office of Community Standards-- accessed August 31, 2023)**

**NTCC Academic Honesty/Ethics Statement:**

NTCC upholds the highest standards of academic integrity. The college expects all students to engage in their academic pursuits in an honest manner that is beyond reproach using their intellect and resources designated as allowable by the course instructor. Students are responsible for addressing questions about allowable resources with the course instructor. Academic dishonesty such as cheating, plagiarism, and collusion is unacceptable and may result in disciplinary action. This course will follow the NTCC Academic Honesty and Academic Ethics policies stated in the Student Handbook. Refer to the student handbook for more information on these subjects.

**ADA Statement:**

It is the policy of NTCC to provide reasonable accommodations for qualified individuals who are students with disabilities. This College will adhere to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations as required to afford equal educational opportunity. It is the student's responsibility to request accommodations. An appointment can be made with the Academic Advisor/Coordinator of Special Populations located in Student Services and can be reached at 903-434-8264. For more information and to obtain a copy of the Request for Accommodations, please refer to the special populations page on the NTCC website.

**Family Educational Rights and Privacy Act (FERPA):**

The Family Educational Rights and Privacy Act (FERPA) is a federal law that protects the privacy of student education records. The law applies to all schools that receive funds under an applicable program of the U.S. Department of Education. FERPA gives parents certain rights with respect to their children's educational records. These rights transfer to the student when he or she attends a school beyond the high school level. Students to whom the rights have transferred are considered "eligible students." In essence, a parent has no legal right to obtain information concerning the child's college records without the written consent of the student. In compliance with FERPA, information classified as "directory information" may be released to the general public without the written consent of the student unless the student makes a request in writing. Directory information is defined as: the student's name, permanent address and/or local address, telephone listing, dates of attendance, most recent previous education institution attended, other information including major, field of study, degrees, awards received, and participation in officially recognized activities/sports.

**Eagle Assist**

At Northeast Texas Community College, we understand that students may need support that extends beyond the classroom. "Eagle Assist" is the place to start when looking for that type of assistance. Our

support system is here to help you succeed in both your academic and personal growth.

[www.ntcc.edu/eagleassist](http://www.ntcc.edu/eagleassist)

Services provided:

- Mental health counseling
- Classroom accommodations
- NTCC Care Center Food & Hygiene Closet
- Financial literacy
- Tutoring

Mental Health Counseling Services are available on campus – in person and online – to all NTCC students at no cost. If you are experiencing concerns, you may contact [counseling-center@ntcc.edu](mailto:counseling-center@ntcc.edu) or call 903-434-7825. Open Monday – Thursday, 8am – 6pm; Friday, 8am - noon.